Remarks

With reference to the rejection of claims 1,3,4,5,6, and 10 under 35 U.S.C. 103(a) as allegedly unpatentable over Marcus et al. (US 4,734,862) in view of Nicholls (US 4,059,821), it is respectfully submitted that the invention defined by these claims is not obvious over the disclosures of these references for the following reasons. The Marcus '862 reference is directed to a conflict monitor for traffic control systems of the type disclosed in the introductory section of the subject application. The Marcus '862 system generally teaches monitoring the traffic control signals, and the pedestrian WALK and DON'T WALK pedestrian advisory signals, and testing for conflicts in the conventional manner described in the introductory section of the subject application. More particularly, the WALK pedestrian advisory signals are tested for conflicts with GREEN traffic control signals for lanes or phases which intersect the pedestrian cross-walks. If a WALK signal and a GREEN signal for an intersecting lane exist concurrently, this is a potentially dangerous condition and the conflict monitor causes the intersection to commence a flashing mode of operation in response to this condition until the source of the conflict is resolved. Conflicts are stored in memory and are displayed using a plurality of LED indicators, in order to provide a visual conflict history for use by a field service technician at some time.

Marcus teaches (in col. 1, lines 34-38) that "The "walk" and "don't walk" signals may be considered in a manner similar to that of the colored traffic signals so that a "conflict" may include such errors as providing a "walk" signal across a line of traffic receiving a green light." Concurrent conflicting DON'T

WALK signals for intersecting lanes do not represent the same potential for danger as conflicting WALK and GREEN signals since each DON'T WALK signal advises the pedestrian not to step off the curb-i.e., a DON'T WALK signal conveys a similar advisory indication to a pedestrian as a RED signal does to a motorist. Consequently, concurrently active DON'T WALK pedestrian advisory signals for intersecting pedestrian cross-walks are rarely used to cause the traffic control system to enter the flashing mode of operation for that intersection.

The only specific examples given of conflicts in the Marcus '862 reference are a "green"-"green" conflict (Col. 1, lines 28-31); a "green"-"WALK" conflict (Col. 1, lines 35-38); and a "green"-"green" conflict between channel 1 and channel 2 (Col. 7, line 67-Col. 8, line 2). Marcus provides no guidance regarding how to use a DON'T WALK pedestrian advisory signal to test for traffic signal conflicts, other than to state that the DON'T WALK signals "may be considered in a manner similar to that of the colored traffic signals so that a "conflict" may include such errors as providing a "walk" signal across a line of traffic receiving a green light." In accordance with known conventional standards, these conflicts all require a steady-state (full ON) operation of the conflicting signals. Marcus is absolutely silent with respect to testing for conflicts involving flashing DON'T WALK pedestrian advisory signals.

In order to supply the critical deficiencies inherent in the Marcus disclosure, the Examiner has cited the Nicholls reference for the teaching of the use of a flashing DON'T WALK input signal: according to the Examiner, "It would have been obvious at the time the invention was made to a person having ordinary skill in the art to include the DON'T WALK input signal being flashing to the system of Marcus as taught by Nicholls for the purpose of getting attention from the pedestrian". In so far as understood, the Examiner's conclusion is respectfully traversed.

Firstly, the applicant admits the existence of flashing DON'T WALK signals in a traffic control system environment (see application, page 2, lines 20-32). Consequently, if the Examiner's purpose in citing the Nicholls disclosure is to establish the existence of flashing DON'T WALK signals prior to the advent of the invention, the Nicholls citation is unnecessary and dilatory since the existence of such signals is admitted. Secondly, if the Examiner's purpose in citing the

Nicholls disclosure is to demonstrate the obviousness of testing for conflicts between a flashing DON"T WALK signal and other traffic control signals, the Nicholls citation is entirely off the mark. The Nicholls reference is not at all concerned with conflict monitors and conflict monitoring of traffic control signals and pedestrian advisory signals: the entire thrust of the Nicholls disclosure is directed to solving the problem of legacy traffic light signal controllers which lack the ability to produce flashing DON'T WALK pedestrian advisory signals. Nicholls solves this problem by teaching a modular solution using one or more signal processing modules capable of converting steady-state DON'T WALK input control signals to alternating-state control signals which will change a steady-state DON'T WALK signal to a flashing DON'T WALK signal as observed by a pedestrian. As noted in the Abstract of Nicholls, this converts a standard traffic controller system for operation to a pedestrian clearance mode where a DON'T WALK signal flashes during the interval when the green traffic signal is nearing the end of its period. As clearly shown in Fig. 1 of the Nicholls disclosure, each module-termed a "FLASHER"-is inserted into an existing legacy system between the traffic controller switch 10 and the DON'T WALK pedestrian control lamp units 12. There is nothing in the Nicholls reference which teaches directly or inherently suggests that any signal from the FLASHER can or should be coupled to a conflict monitor for any purpose, much less the claimed purpose of detecting a conflict between a flashing DON'T WALK input signal and at least one of the other traffic control signals and for generating a conflict signal in response thereto.

The statement in the Nicholls Abstract defining a pedestrian clearance mode during which a DON'T WALK signal flashes during the interval when the green traffic signal is nearing the end of its period points out the fundamental difference between a steady-state DON'T WALK signal and a flashing DON'T WALK signal. A steady state DON'T WALK signal is a prohibitive advisory signal to a pedestrian: i.e., a signal advising the pedestrian that it is currently unsafe to step off the curb and attempt to cross the street (much like a RED traffic signal advising a motorist that it is currently unsafe to proceed through the intersection). In direct contrast, a flashing DON'T WALK signal is a permissive advisory signal to a pedestrian: i.e., a signal advising the pedestrian that it is currently safe to

step off the curb and attempt to cross the street so long as the DON'T WALK signal is flashing. This period during which the DON'T WALK signal is flashing (and thus functioning in the opposite advisory mode from a steady-state DON'T WALK signal) is termed the pedestrian clearance interval in the traffic control system art.

Independent system claim 1 is expressly directed to a system for testing for conflicts between a flashing DON'T WALK input signal (which inherently defines a pedestrian clearance interval to those of ordinary skill in the art) and other traffic light control signals. While the Examiner has cited Col. 1, lines 31-40 of Marcus for the supposed teaching of detecting a conflict between a flashing DON'T WALK input signal and other traffic control signals, there is nothing in the referenced text which supports this assertion. The referenced text reads in full "In addition, a conflict monitor may measure the duration of the green, yellow, or red lights and indicate a fault if these durations meet or exceed predetermined time periods. The "walk" and "don't walk" signals may be considered in a manner similar to that of the colored traffic signals so that a "conflict" may include such errors as providing a "walk" signal across a lane of traffic receiving a green light". This prior art technique is more thoroughly described in the introductory section of the present application (on page 1, lines 11-19), where it is explained that only continuously activated DON'T WALK signals are monitored in prior art devices for conflicts with other signals. As noted in lines 19-31 of page 1 of the present application, this prior art technique for conflict monitoring allows the potentially dangerous set of conflicting signal conditions between a flashing "don't walk" pedestrian signal (signifying the pedestrian clearance interval) and a "green" vehicle signal for an intersecting vehicle lane, since this is not perceived as a conflict in prior art devices. While the Examiner has cited the Nicholls disclosure for the teaching of using a flashing DON'T WALK signal as an input to the Marcus conflict monitoring system, it is respectfully submitted that this hypothetical conclusion is entirely off the mark. As noted above, Nicholls is entirely devoted to the goal of retrofitting legacy traffic control systems having no capability for providing flashing DON'T WALK pedestrian advisory signals to create improved systems having this capability, all at nominal cost. Nicholls is totally devoid of any discussion of conflict monitoring, and provides no incentive

to modify existing conflict monitoring techniques in any manner. In fact, the only intersection between the Marcus and Nicholls disclosures lies in the fact that both are generally concerned with the field of traffic control signal generation techniques. Close perusal of both disclosures reveals that the Nicholls solution pertains to that portion of a traffic signal control system which is not even illustrated in the Marcus disclosure. Consequently, it is difficult to see just how the two disclosures might be combined in any meaningful way, other than to assume that the Nicholls modular modification to legacy traffic control systems might be used in older traffic control systems with which the Marcus conflict monitoring system is associated. It is respectfully submitted that this hypothetical combination simply does not render obvious the combination of claim 1 which requires the positively recited elements for enabling the motoring of flashing DON'T WALK signals (the pedestrian clearance interval signals) for conflicts with other traffic light control signals. Absent any such teaching in the prior art, the Examiner has not made out a *prima facie* case for unpatentability. Consequently, it is respectfully submitted that claim 1 is clearly patentable over the disclosures of the Marcus and Nicholls references, taken singly or in combination.

Claim 5 is directed to the method of monitoring for conflicts between flashing DON'T WALK signals and traffic light control signals which requires the steps of detecting a flashing DON'T WALK pedestrian advisory sign control signal, detecting the states of other (traffic light) control signals, and generating a conflict signal when a conflict occurs between a flashing DON'T WALK signal and at least one of the other control signals. As discussed above in detail, neither Marcus '862 nor Nicholls '821 teach directly or inherently suggest monitoring flashing DON'T WALK pedestrian advisory control signals. Consequently, it is respectfully submitted that method claim 5 is clearly patentable over the disclosure of these two references, taken singly or in combination.

The applicant respectfully traverses the rejection of claims 3 and 10 for the following reasons. Claim 3 is directed to a display means for indicating whether the means for monitoring for conflicts between flashing DON'T WALK control signals and traffic light control signals is enabled. This claimed display means provides a visual indication to the operator that the monitoring means is operational. While the Examiner has cited display 14 of Marcus '862 (and Col. 6,

lines 30-45) as an alleged teaching of the display means of this claim, it is respectfully submitted that the Marcus '862 display does not possess this functional capability. The applicant has carefully reviewed the cited portion of the Marcus patent text (col. 6, lines 30-45) but there is no reference therein to the display means 14. The Marcus '862 display is described in Col. 4, lines 2-5; Col. 7, lines 52-68; and Col. 8, lines 1-52. As clearly taught in these portions of the reference, the display 14 provides visual indications of the status of each of the channels during prior conflicts or other prior errors. There is nothing in Marcus '862 which teaches directly or inherently suggests providing a display for the purpose of indicating the operational status of a means for monitoring for conflicts between flashing DON'T WALK control signals and traffic light control signals. This is not surprising, since the Marcus '862 system has no provision for enabling and disabling this special monitoring system. Consequently, it is respectfully submitted that claim 3 is clearly patentable over the disclosure of the Marcus '862 reference. Dependent method claim 10 is the method counterpart to dependent system claim 3 covering the display of the enabled state of the monitoring means. For the reasons advanced above with regard to claim 3 it is respectfully submitted that method claim 10 is clearly patentable over the disclosure of Marcus and Nicholls.

The applicant respectfully traverses the rejection of claims 4 and 6 for the following reasons. Claim 4 further defines the display of claim 3 as one which includes a plurality of display units assigned to different channels for indicating those channels for which the monitoring means is enabled. In the system according to the invention, it is possible to enable the monitoring means for specific channels, and the display of claim 4 provides a visible indication to the operator of which channels (if any) are so enabled. Since there is nothing in Marcus '862 which teaches a single enablement display, *a fortiori* Marcus fails as a teaching reference for the display of claim 4. The Examiner's characterization of the limitation of this claim as one which merely requires a plurality of display units assigned to different channels is incomplete and thus off the mark. Claim 4 specifically recites a plurality of display units assigned to different channels for indicating those channels for which said monitoring means is enabled. There is nothing in the Marcus reference which teaches directly or inherently suggests

such a plurality of display units. Claim 6 is the method counterpart to dependent system claim 4 and covers the display of enabled channel information. Specifically, this claim adds the step of providing a display of those channels on which the step of generating a conflict signal is enabled. For the reasons advanced above with regard to claim 4, it is respectfully submitted that method claim 6 is clearly patentable over the disclosure of Marcus '862.

Claim 2 is directed to a manually settable switch means for enabling and disabling the means for monitoring for conflicts between flashing DON'T WALK control signals and traffic light control signals. The claimed switch means enables the operator to select whether or not this functional capability is to be used in a given installation. The manually settable switch means described in col. 4, lines 1-17 and shown in Fig. 1 of the Carlson reference cited by the Examiner serve an entirely different purpose from that disclosed and claimed by the applicant. According to Carlson, a plurality of three position toggle switches S1-Sn are provided to select (or not select) a test signal for communication to a conflict monitor. A START/RESET switch operates a timing mechanism that initiates measurement of the response time for the conflict monitor to produce a fault indication in response to receipt and detection of voltages produced by a test apparatus, simulating a malfunctioning traffic controller. Switches SW2 and SW3 select various DC voltages that are used for test purposes; and an ON/OFF power switch is also provided. It is not clear from the statement of the rejection just which switch in the Carlson disclosure provides the teaching required for this rejection. There is nothing in Carlson which directly teaches or inherently suggests the use of a switch to enable and disable the conflict monitoring means. While the Examiner has chosen to disregard this statement of functionality, the limitation of claim 2 is cast in terms of *means-plus-function* form. As such, the Examiner is required to accord patentable significance to this limitation. Since the Carlson reference teaches switches configured for entirely different functions, there is no evidence of record to support the Examiner's conclusion of unpatentability. Accordingly, it is respectfully suggested that claim 2 is clearly patentable over the disclosure of the references cited and applied. Method claim 7 is directed to manually enabling the step of generating a conflict signal involving a flashing DON'T WALK signal and other traffic control signals, and is

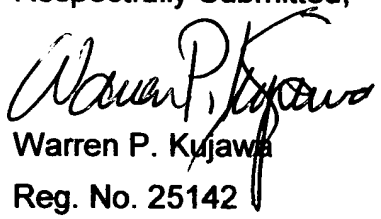
the method counterpart to dependent system claim 2. For the reasons advanced above with regard to claim 2 it is respectfully submitted that method claim 7 is clearly patentable over the disclosure of Marcus '862.

The remaining references have been carefully considered, but are not seen to supply the deficiencies noted in the references discussed above.

In view of the above remarks, it is respectfully submitted that this application is clearly in condition for allowance. Accordingly, the Examiner is respectfully requested to pass this case for issue.

If deemed useful in any further prosecution of this application, the Examiner is invited to contact the undersigned at 702-270-8853.

Respectfully Submitted,



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